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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,896	12/31/2003	Ji-Cheng Zhao	125503-5	8916

6147 7590 02/22/2005

GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER
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LAVILLA, MICHAEL E

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/749,896

Applicant(s)

ZHAO ET AL.

Examiner

Michael La Villa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 33-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 62 is/are allowed.
- 6) ☒ Claim(s) 33-50, 53-55 and 59-61 is/are rejected.
- 7) ☒ Claim(s) 51, 52, 56-58 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 20031231.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:
2. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 36, 41-44, and 59-61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
  - I. Regarding Claim 36, it is unclear whether the claimed second coating layer is to consist essentially of Al and be at least 90 atomic percent Al.
  - II. Regarding Claims 41-44, it is unclear whether the recited elements of these claims are necessarily present in the claimed amounts or whether, in the event that the recited elements are present, they are to be present in the claimed amounts.
  - III. Regarding Claim 59, it is unclear what is meant by the phrase "said reacted coating layer" as there is no antecedent basis for this phrase in Claim 33.

### ***Claim Objections***

4. Claim 36 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. It is unclear whether Claim 36 claims a second coating layer that consists essentially of Al

and comprises at least 90 atomic percent Al, in which case the claim is properly further limiting, or whether Claim 36 claims a second coating layer that consists essentially of Al, with no atomic percentage requirement, in which case the claim is not properly further limiting.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:
6. A person shall be entitled to a patent unless –
7. (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
8. Claims 33-46, 49, 50, 53-55, 59, and 60 are rejected under 35 U.S.C. 102(e) as being anticipated by Fisher et al. USP 6,585,864. Fisher teaches protecting a substrate by a process of applying a nickel aluminum layer and an aluminum layer. The first layer is 150-200 microns and the aluminum coating is 40 or 20 microns. The coatings are reacted to form a nickel aluminide layer, which would be expected to have a concentration gradient in view of the described underlying precipitate containing layer and overlying nickel aluminide layer. See Fisher et al. USP 6,585,864 (col. 5, line 19 through col. 6, line 35; col. 11, line 53 through col. 12, line 35). Magnetron sputtering may be identified with the claimed deposition methods of Claim 34 and 39. The alumina layer that forms may be identified with the claimed ceramic layer of Claims 59 and 60.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Fisher et al. USP 6,585,864. Fisher teaches protecting a substrate by a process of applying a nickel aluminum layer and an aluminum layer. The first layer is 150-200 microns and the aluminum coating is 40 or 20 microns. The coatings are reacted to form a nickel aluminide layer, which would be expected to have a concentration gradient in view of the described underlying precipitate containing layer and overlying nickel aluminide layer. See Fisher et al. USP 6,585,864 (col. 5, line 19 through col. 6, line 35; col. 11, line 53 through col. 12, line 35). Magnetron sputtering may be identified with the claimed deposition methods of Claim 34 and 39. The alumina layer that forms may be identified with

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the claimed ceramic layer of Claims 59 and 60. Fisher may not exemplify a first coating layer thickness as claimed, but does teach that effective first coating layers may obtain the claimed thicknesses. It would have been obvious to one of ordinary skill in the art at the time of the invention to fabricate the materials of Fisher with a first coating layer having the claimed thickness as Fisher teaches that effective articles may possess first coating layer thicknesses in the claimed range.

***Allowable Subject Matter***

12. Claims 51, 52, and 56-58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
13. Claim 62 is allowed.
14. Claim 61 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
15. With respect to Claims 51, 52, 56-58, 61, and 62, neither the reviewed prior art, nor the prior art of record teaches or suggested the subject matter of these claims. Particularly, a B2-structured NiAl phase, with or without gradient of Claim 52, is not taught or suggested in combination with the other claimed limitations. Application of the claimed process on superalloy substrates that are based on nickel, iron, or cobalt is not taught or suggested. Further, providing a yttria-stabilized zirconia ceramic layer is not taught or suggested. Moreover, the

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method of Claim 62, which requires both a B2-structured NiAl phase, as claimed, and a concentration gradient, as claimed, is not taught or suggested. Hence, Claims 51, 52, 56-58, 62, and 62 are allowable.

**Conclusion**

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael La Villa whose telephone number is (571) 272-1539. The examiner can normally be reached on Tuesday, Thursday, and alternating Fridays.
17. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael La Villa  
17 February 2005

